

CHICAGO FORECAST DISTRICT.

Until the last few days of the month the weather conditions were without marked features. On account of the very late spring, no damage was caused by frosts.

A storm, which developed in the British northwest during the 25th, moved eastward over the northern districts on the 26th, 27th, and 28th, accompanied by thundersqualls in the upper Lake region on the 27th and 28th and severe local storms in portions of Iowa and Missouri on the night of the 27th and 28th. The following forecast was issued for Lake Michigan, April 26:

Brisk southerly winds increasing, showers and probably squalls Thursday.

On the next day this advisory message was issued to all points on lakes Michigan and Huron:

Brisk and high southerly winds, showers and thundersqualls.

Forecasts for thunderstorms were issued on the 26th and 27th for Iowa and Missouri.

By the morning of April 30 another storm had developed over eastern Colorado, which moved northeastward over Lake Superior within the next thirty-six hours, causing gales generally over the upper lakes. Storm signals were ordered for Lake Michigan at 10:30 a.m. and for Lake Huron at 10 p.m., April 30.—*H. J. Cox, Professor.*

PORTLAND, OREG., FORECAST DISTRICT.

Storm signals were ordered on the 11th and 17th, and were timely and of value, especially on the bay below Astoria, where fishing was in progress.

No river forecasts were issued during the month. Preparations were, however, made for a good service during the expected high water in May and June.

Frost warnings were issued on several occasions during the month.—*B. M. Pague, Forecast Official.*

SAN FRANCISCO FORECAST DISTRICT.

Abnormally warm weather prevailed during the first half of the month.

No destructive windstorms occurred.

Severe frosts occurred in portions of the Sacramento and San Joaquin valleys and in portions of the coast and San Francisco Bay sections on the 29th, causing some injury to grapes, but other fruits were uninjured. A large fruit grower from the vicinity of Fresno reports that the frost seemed to go in streaks; that occasionally one side of the vines would be turned black while the other side showed no sign of injury; also, that a thermometer hung 4 to 5 feet above the ground would show a temperature of about 40° while ice formed on the small pools of water near by. Climbing vines held up by supports were uninjured, except, perhaps, within a few inches of the ground.—*Alexander G. McAdie, Forecast Official.*

AREAS OF HIGH AND LOW PRESSURE.

During April there were six areas of high pressure and eight of low pressure sufficiently well defined to be traced on Charts I and II. For a description of these charts and an explanation of the figures see page 164 of this Review. In preparing this matter full reports for April up to the 10th of the month only have been used. The principal facts regarding the origin, duration, velocity, and disappearance of these highs and lows will be found in the accompanying table, and the following description is added:

Highs.—All of the highs except No. I began on the Pacific coast. Nos. II and IV began on the south California coast and moved to the north Pacific coast before appearing on the land. The general motion was east or southeast. Nos. II and IV were last noted near the middle Mississippi Valley. No. II was followed to the Florida coast. Nos. I, IV, and V disappeared over Nova Scotia or Newfoundland.

Lows.—A rather permanent low pressure in southern California was the locus, or origin, of lows I, II, VI, and VIII. Nos. III and VII were first noted on the north Pacific coast, and IV and V to the north of Montana. The general motion of these lows was east or northeast. No. I was last seen off the Florida coast, No. VI in the middle Mississippi Valley, Nos. V and VII disappeared to the north of Lake Superior, and Nos. II, III, IV, and VIII were last seen on the north Atlantic coast or over Newfoundland. The highest winds of the month accompanying these lows were as follows: On the p. m. of the 4th, as low No. I approached the south Atlantic coast, a north wind of 56 miles an hour occurred at Hatteras. On the evening of the 7th as low No. III approached the middle Atlantic coast, Kittyhawk reported a southwest wind of 48 miles and New York City 46 miles from the east. The night of the 7th and 8th Woods Hole experienced a southeast wind of 48 miles. On the evening of the 16th, from the influence of a storm off the New England coast, New York city reported a northwest wind of 46 miles and that night Nantucket had a northwest wind of 48 miles. On the evening of the 27th, as low No. VII moved toward the upper Lakes, Marquette reported a southeast wind of 44 miles, and on the evening of the 29th, induced by the same low north of Lake Superior, Chicago experienced a southeast wind of 56 miles an hour.—*H. A. Hazen, Professor.*

Movements of centers of areas of high and low pressure.

Number.	First observed.			Last observed.			Path.		Average velocities.	
	Date.	Lat. N.	Long. W.	Date.	Lat. N.	Long. W.	Length.	Duration.	Daily.	Hourly.
High areas.							<i>Miles.</i>	<i>Days.</i>	<i>Miles.</i>	<i>Miles.</i>
I.....	*31, a.m.	52	114	8, p.m.	48	54	3,340	8.5	381	15.9
II.....	1, a.m.	37	123	7, a.m.	43	97	2,340	6.0	390	16.2
III.....	6, a.m.	47	137	12, a.m.	30	80	3,180	6.0	530	22.1
IV.....	8, p.m.	35	122	20, a.m.	47	63	4,680	11.5	407	17.0
V.....	18, p.m.	42	127	24, p.m.	44	68	3,190	6.0	532	22.2
VI.....	21, a.m.	44	124	25, p.m.	37	57	2,460	4.5	547	22.8
Total.....							19,090	42.5	2,787	116.2
Mean of 6 paths.....							3,182		465	19.4
Mean of 43.5 days.....									449	18.7
Low areas.										
I.....	1, p.m.	34	113	4, p.m.	27	79	2,460	3.0	820	34.2
II.....	3, p.m.	32	112	10, a.m.	50	62	3,900	6.5	600	25.0
III.....	8, p.m.	48	124	13, a.m.	47	68	3,080	4.5	680	28.3
IV.....	11, a.m.	33	115	15, a.m.	48	68	2,700	4.0	680	26.8
V.....	15, p.m.	32	118	19, a.m.	47	68	1,620	3.5	463	19.3
VI.....	17, a.m.	34	111	24, a.m.	41	90	3,380	7.0	480	20.0
VII.....	24, p.m.	48	126	29, a.m.	49	86	1,980	4.5	440	18.3
VIII.....	29, a.m.	35	107	7, p.m.	43	73	2,160	3.5	617	25.7
Total.....							21,300	36.5	4,790	199.6
Mean of 8 paths.....							2,662		599	25.0
Mean of 36.5 days.....									584	24.3

* March. † May.

RIVERS AND FLOODS.

Interest in that portion of the Mississippi watershed north of Cairo during the month of April was confined to the Missouri River. There was the usual spring rise in the Mississippi, the crest reaching Cairo on the 29th. No danger-line